PMU Power Grid Coverage
Group # SD0903

Josh Adamek, Brady Brodsho, Garrett Kropp

Introduction

- Phasor Measurement Units(PMUs)
- Observability of an Electrical Grid
- Cost
- Placement Algorithms

Requirements

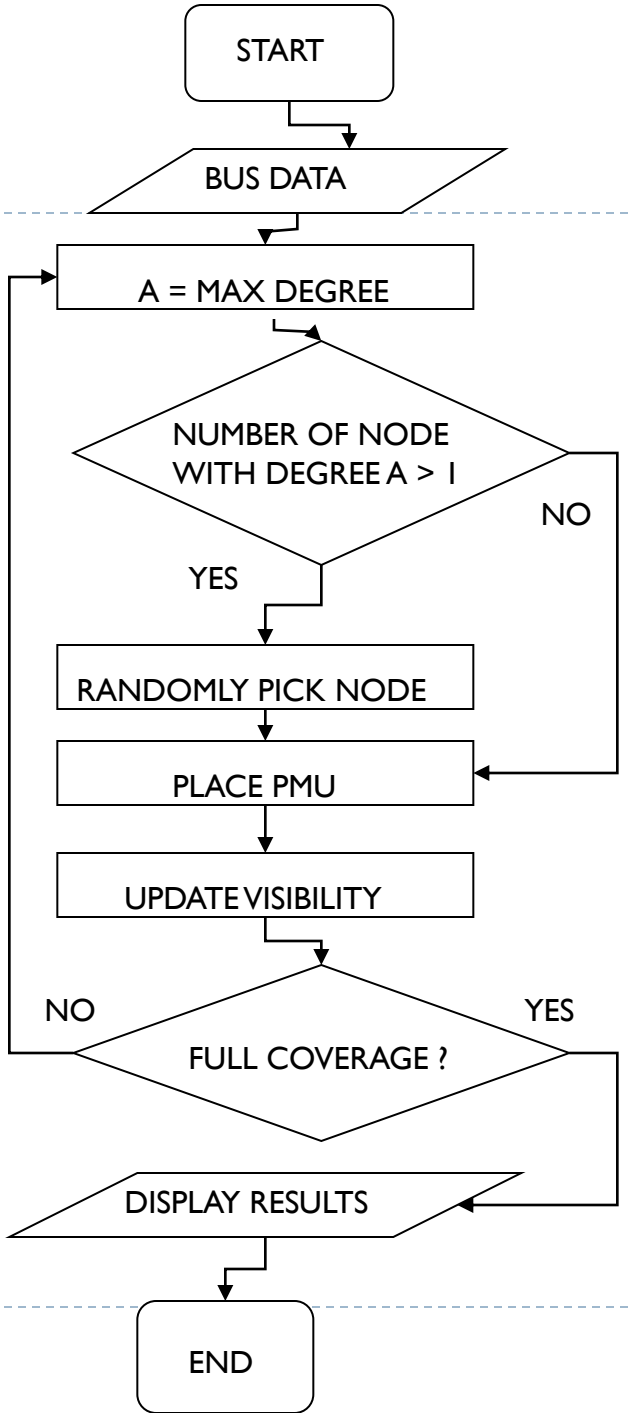
- Full Coverage
- Minimal Placement
- Replication of Current Algorithms
- Development of Our Own Algorithms
- Efficiency
- Conference Paper
- Visual Accessibility of Algorithms

Technical Content

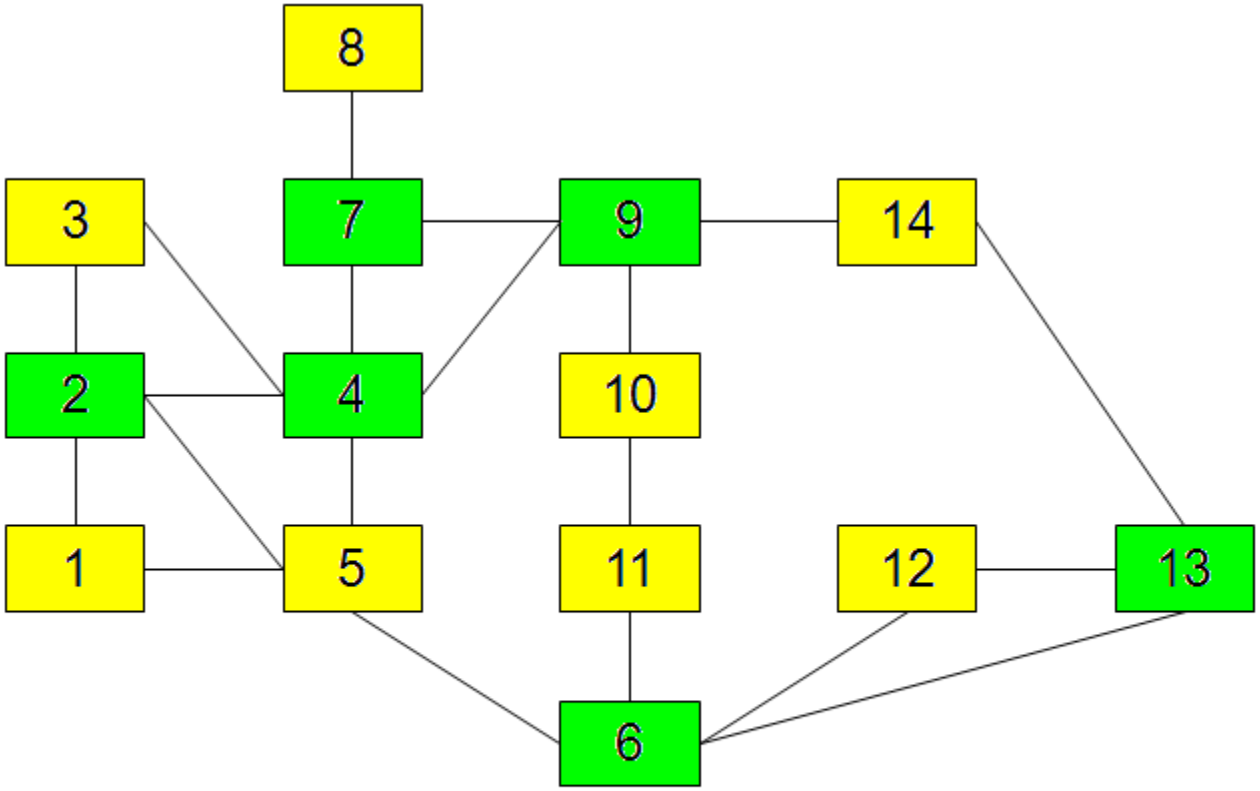
- Current Algorithms
  - Greedy
  - Random Node
  - Random Edge
- Ideas for Our Own Algorithm
  - Modified Greedy

Greedy Algorithm

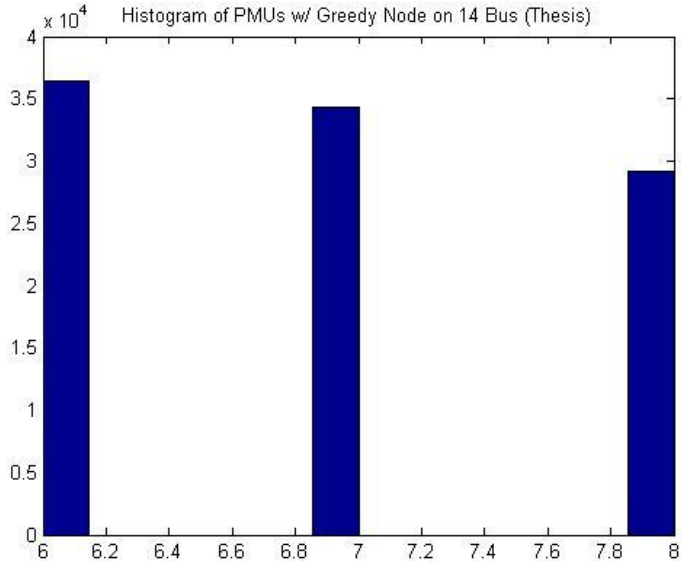
- Basic Principle
- Considerations
- Industry Correlation

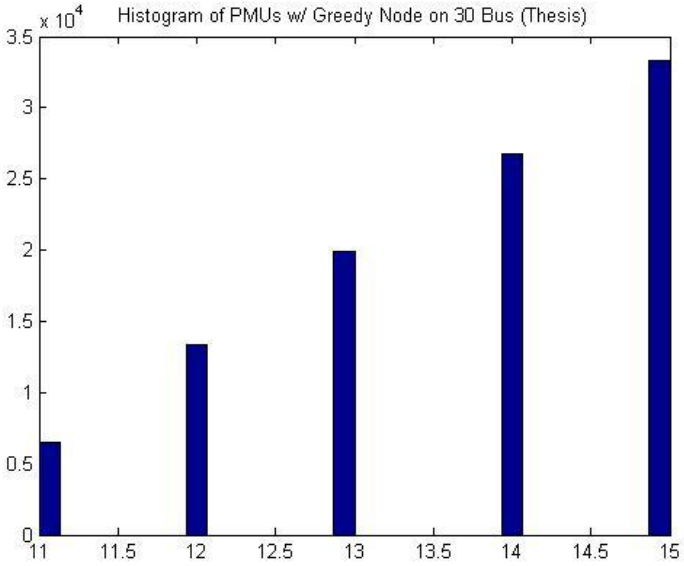


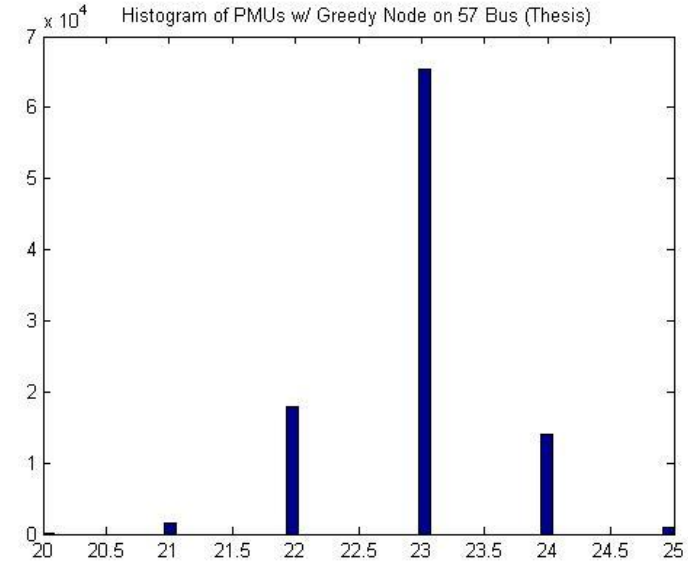
Greedy Algorithm Test Case

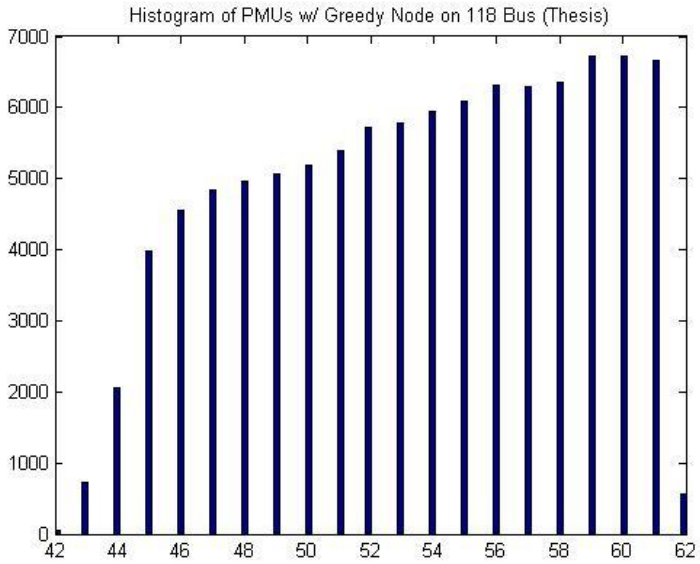


Overall Greedy Algorithm Results



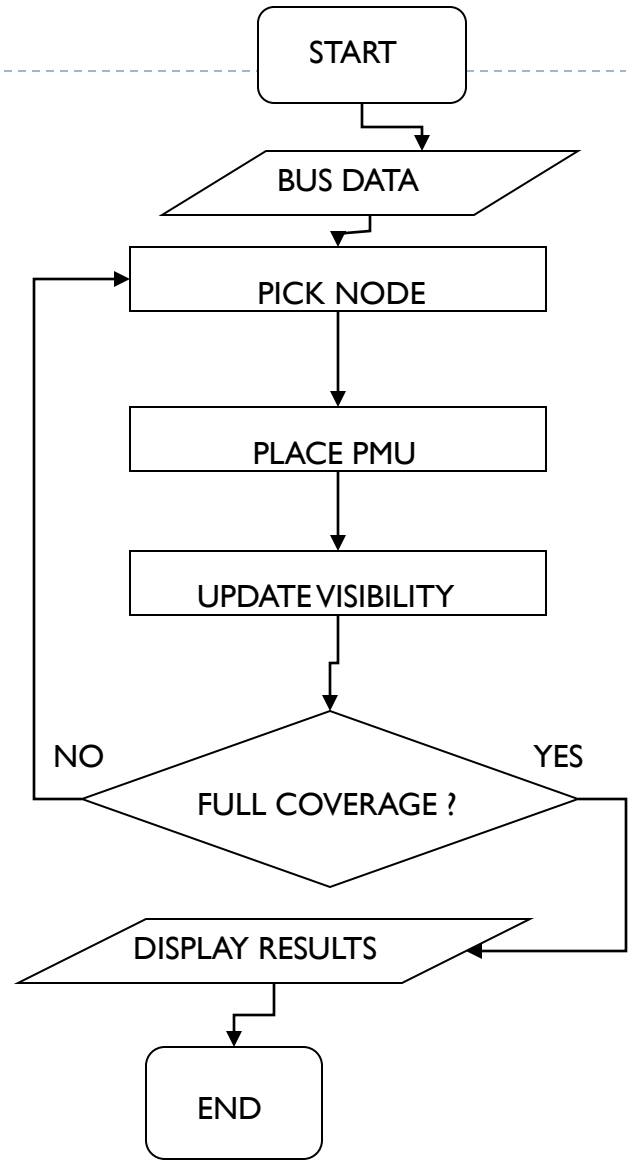






Random Node Algorithm

- Basic Principle
- Considerations
- Industry Correlation



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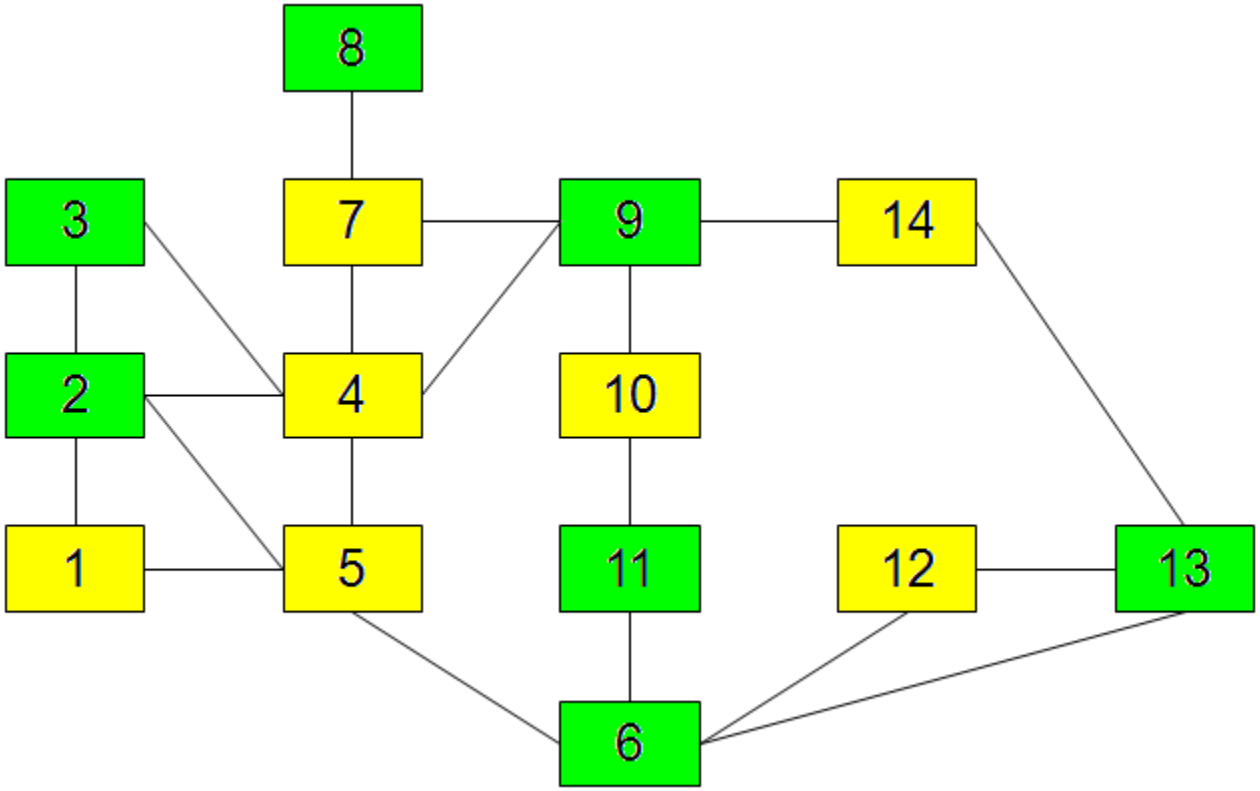

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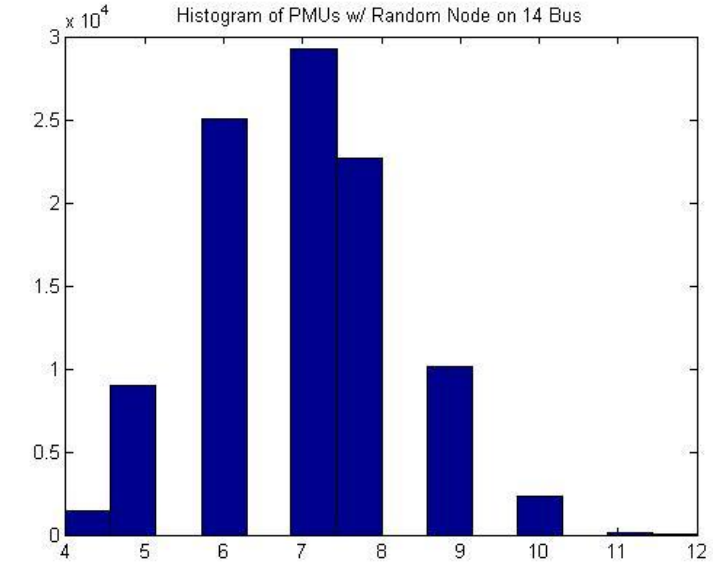
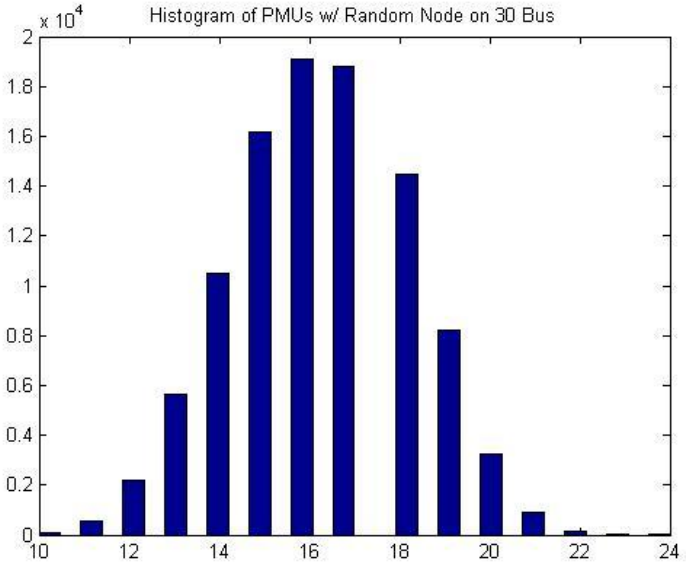
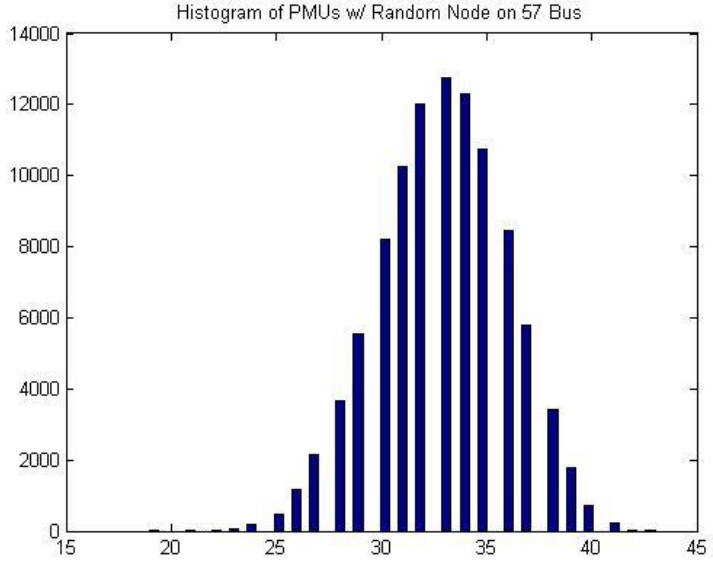
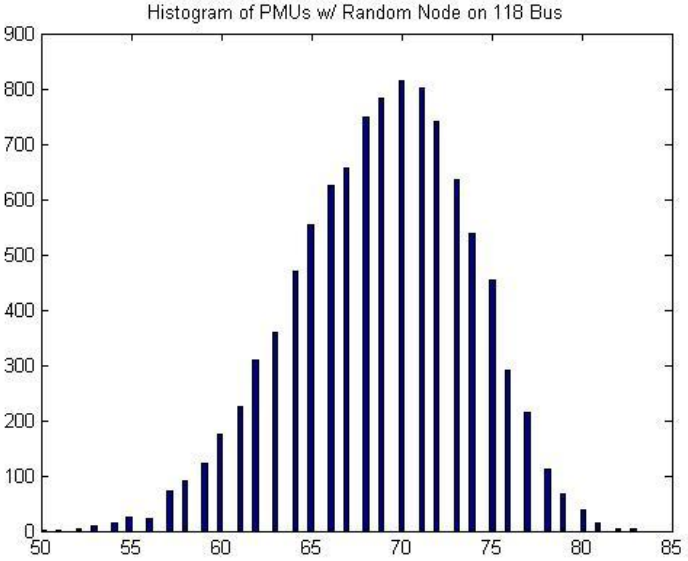


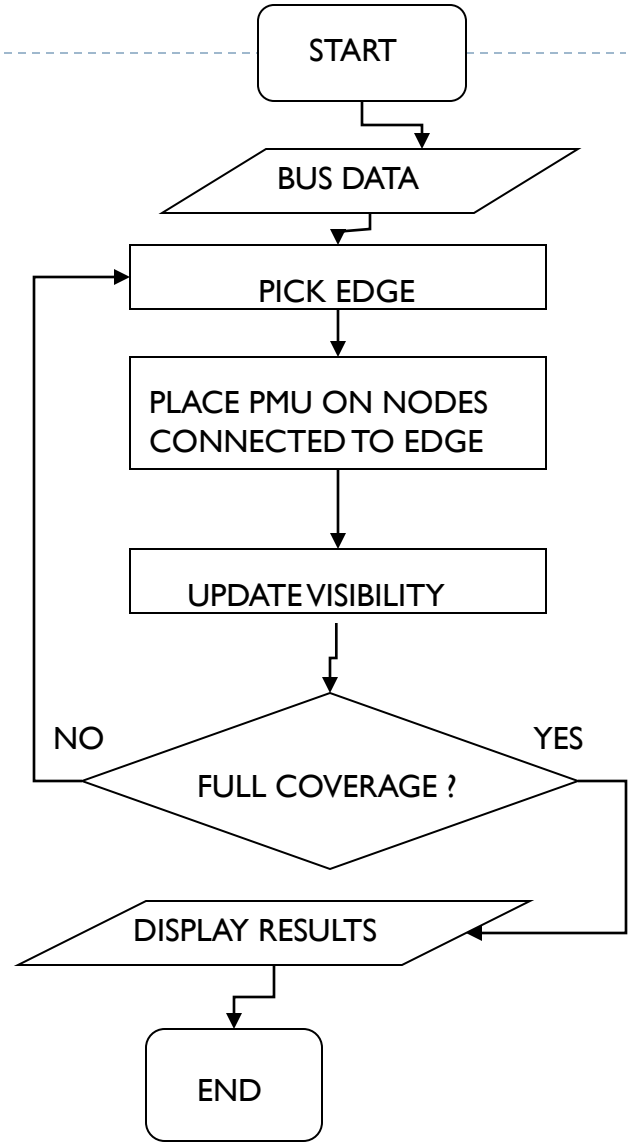






Random Edge Algorithm

- Basic Principle
- Considerations
- Industry Correlation



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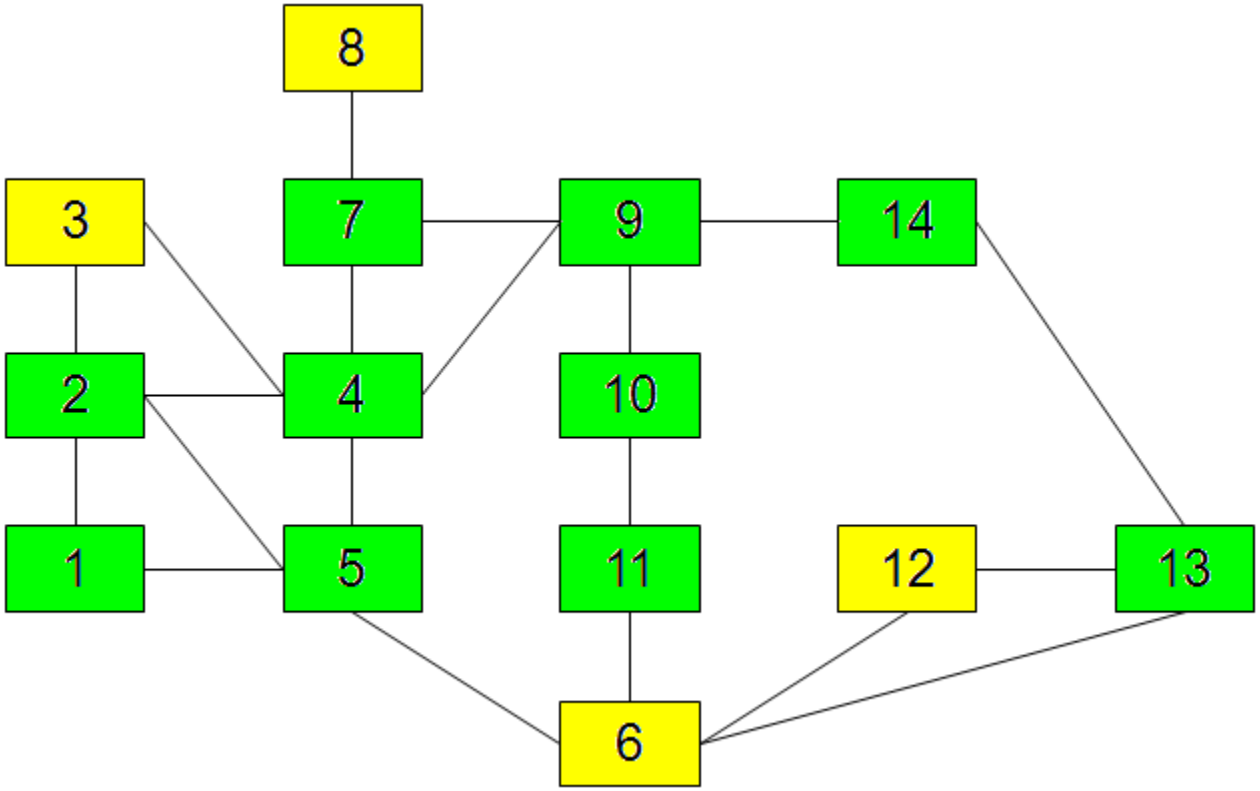
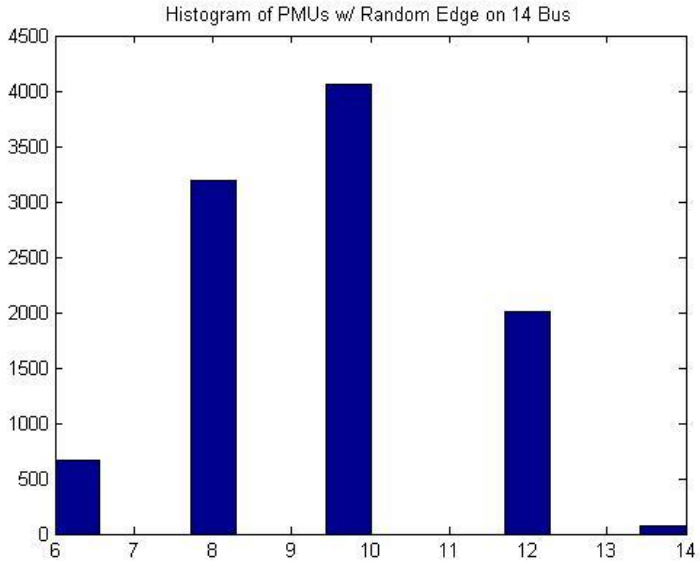
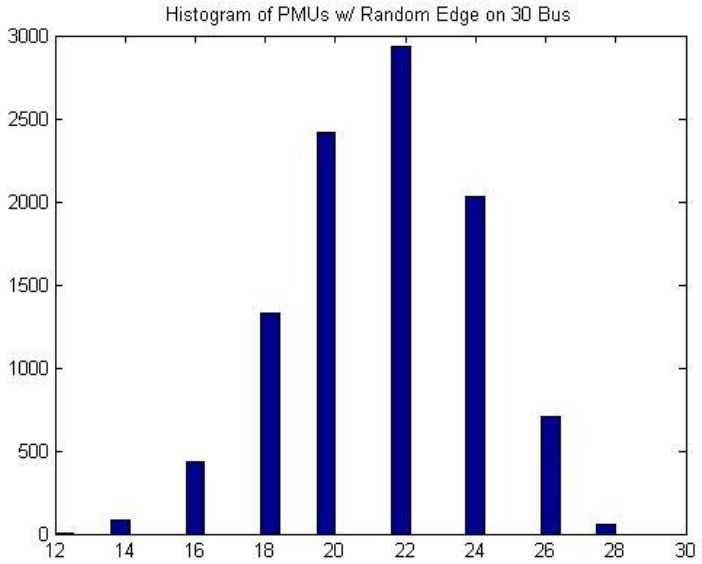
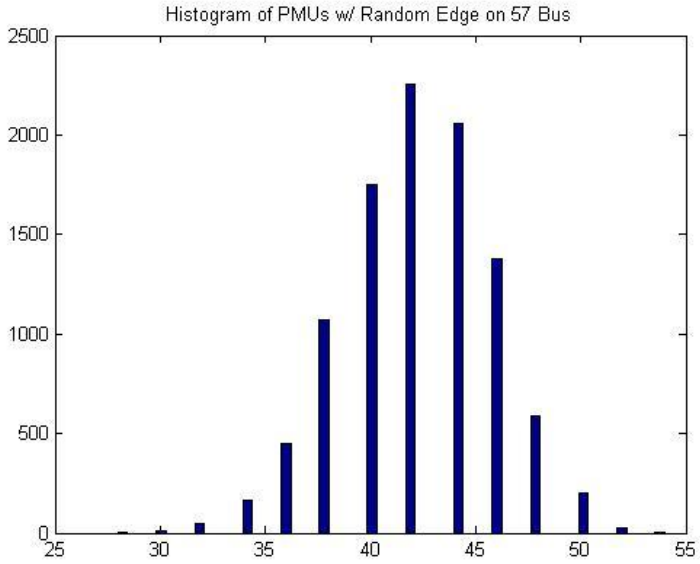
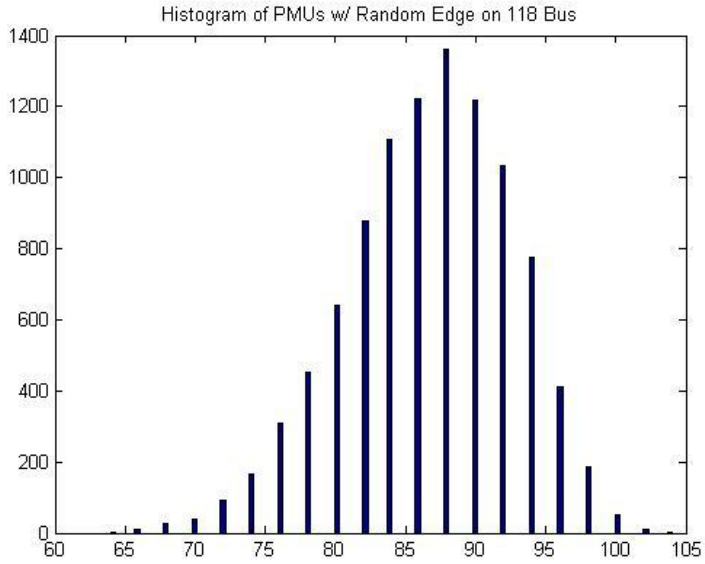


Overall Random Edge Algorithm Results









Project Status

- Able to successfully replicate three algorithms
- Obtain books for further research advancement
- Foundation established for our own design algorithms
- Confident in meeting deadlines for next semester

Updated Time Line

Week	Description	Effort
1	Review Previous Semester work	ALL
2	Research Own Algorithm	ALL
3	Research Own Algorithm	ALL
4	Research Own Algorithm	ALL
5	Implement Own Algorithm	ALL
6	Implement Own Algorithm	ALL
7	Implement Own Algorithm	ALL
8	Finalize Algorithms/Start GUI	ALL
9	Write Conference Paper	ALL
10	Write Conference Paper	ALL
11	Write Conference Paper	ALL
12	Write Conference Paper	ALL
13	Revise Conference Paper	ALL
14	Revise Conference Paper	ALL
15	Conference Paper Due	ALL
16	Presentations /GUI	ALL
17	Presentations /GUI	ALL

Budget

- Combinatorial Optimization - $15.00
- Introduction to Graph Theory by Douglas West - $100.00
- Graphs and GUIs with MATLAB, 2nd Ed. by Patrick Marchand - $21.00
- Total Cost: $136.00

Summary

- Three Algorithms
- Comparison of Results
- Basic Foundation
- MATLAB Knowledge